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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,717	10/24/2005	Richard Quentin Carmichael	D4916-0007	4056
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EXAMINER				
SCHNEIDER, CRAIG M				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/541,717

Applicant(s)CARMICHAEL, RICHARD
QUENTIN**Examiner**

CRAIG M. SCHNEIDER

Art Unit

3753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21, 24, 26 and 27 is/are pending in the application.
- 4a) Of the above claim(s) 16-19 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 26 is/are allowed.
- 6) ☒ Claim(s) 1-21, 24, and 27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Claims 16-19 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 7/11/07.

Claim Rejections - 35 USC § 112

2. Claims 9-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim 9 recites the limitation "the second outlet passage" in lines 4 to 5. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. Claims 1, 2, 7, 8, 9, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Borg et al. (3,780,767).

Borg et al. disclose a body (20) defining a vortex chamber (41), having a circumferential wall and oppositely disposed end walls the vortex chamber defining a void and having a longitudinal axis extending through the void, an inlet (40) extending within the body and opening at the circumferential wall, the inlet being disposed to admit fluid into the chamber in a tangential direction with respect to the longitudinal axis of the vortex chamber so as to promote a rotational flow of the fluid within the vortex chamber

and about the longitudinal axis, thereby to generate a low pressure region within the fluid that is centered on the longitudinal axis, and an outlet (42) comprising an escape aperture situated on the longitudinal axis of the vortex chamber which is provided in one of the end walls so as to open into the low pressure region.

Regarding claim 9, the vortex chamber is provided in a control element (PS) supported by the body (20) provided with a second inlet passage (21 to inner surface of PS) and a second outlet passage (outer surface of PS). The second inlet passage communicating with the inlet to the vortex chamber and the outlet passage communicating with the escape aperture.

Regarding claim 14, the control element is secured to the body by a cap (28).

6. Claims 1, 3, 6-9, 13, 14, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Moore (2,020,563).

Moore discloses a condensate trap comprising a body (10 and 11) defining a vortex chamber (29). The vortex chamber defining a void (area above 27 and below 16) and having a circumferential wall and oppositely disposed end walls and having longitudinal axis extending through the void. The inlet (14) extending within the body and opening at the circumferential wall. The inlet being disposed to admit fluid into the chamber in a tangential direction with respect to the longitudinal axis of the vortex chamber so as to promote a rotational flow of the fluid within the vortex chamber about the longitudinal axis, thereby to generate a low pressure region within the fluid that is centered on the longitudinal axis. The outlet (16) comprising an escape aperture provided in one of the end walls and situated at an axial end of the chamber so as to

open into the low pressure region in operation of the condensate trap (page 2, col. 2, line 43 to page 3, col. 2, line 8).

Regarding claim 9, the vortex chamber is provided in a control element (27) supported by the body provided with a second inlet passage (15) and a second outlet passage (18). The second inlet passage communicating with the inlet to the vortex chamber and the second outlet passage communicating with the escape aperture.

Regarding claim 13, the inlet is one of a plurality of inlets (33) which are directed tangentially of the chamber and are distributed equally around the vortex chamber.

Regarding claim 14, the control element is secured to the body by a cap (11).

Regarding claim 24, the functional recitation that "the condensate flashing to steam in the low pressure region of the chamber if the condensate is at a temperature higher than the saturation temperature at the pressure of the low pressure region" is simply an inherent thermodynamic property of steam at given conditions related to the steam's pressure and temperature compared to its saturation temperature under low pressure conditions. The steam/condensate fluid in Moore would display the same behavior under the stated conditions in Claim 24.

Claim Rejections - 35 USC § 103

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
8. Claims 3-6 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Borg et al. in view of Freimann (5,573,029).

Borg et al. disclose all the features of the claimed invention except that the vortex chamber has a portion that is frusto conical. Freimann discloses the use of a cylindrical inlet chamber (2) followed by the frusto conical section (4) of the chamber (col.5, lines 14-60).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a frusto conical section of the vortex chamber after the cylindrical section of the inlet of the vortex chamber as disclosed by Freimann onto the vortex chamber of Moore, to create a channeling structure to aid in directing the flow of the fluid to the exit of the chamber.

9. Claims 2, 4, 5, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moore as applied to claim 1 above, and further in view of Freimann (5,573,029).

Moore discloses all the features of the claimed invention except that the vortex chamber has a portion that is cylindrical. Freimann discloses the use of a cylindrical inlet chamber (2) followed by the frusto conical section (4) of the chamber (col.5, lines 14-60).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a cylindrical section at the inlet of the vortex chamber of Freimann before the frusto conical vortex chamber of Moore, to create a channeling structure to aid in directing the flow of the fluid to the exit of the chamber.

10. Claims 9-12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moore in view of Scott, Jr. et al. (3,170,477).

Moore discloses a control element (entire device). Moore does not disclose that the vortex chamber is provided in a control element supported by a body provided with inlet and outlet passage, the inlet passage communicating with the inlet to the chamber and the outlet passage communicating with the escape aperture and further that the control element and the body abut each other at respective contact surfaces, the inlet and outlet passage opening at respective ports on the contact surface of the body, and the inlet and escape aperture communicating with respective ports at the contact surface of the control element. Scott, Jr. et al. disclose the use of a control element (25 and 42) supported by a body provided (20) with inlet (21) and outlet (31) passage, the inlet passage communicating with the inlet (24) to the chamber and the outlet passage (27) communicating with the escape aperture and further that the control element and the body abut each other at respective contact surfaces as seen in Figure 1, the inlet and outlet passage opening at respective ports on the contact surface of the body, and the inlet and escape aperture communicating with respective ports at the contact surface of the control element (col. 2, line 55 to col. 3, line 21).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a body that houses a control element as disclosed by Scott, Jr. et al. to enclose the control element of Moore, in order to have a replaceable control element inside a protective housing.

Regarding claim 11, Scott, Jr. et al. disclose that the control element is engageable with the body in any one of the plurality of different rotational positions.

Regarding claim 12, Scott Jr. et al. disclose the use of a circular groove in the contact face to provide for one of the passages.

Regarding claim 15, the chamber is open at a face of the control element opposite the contact surface (area through 16), the chamber being closed by the cap.

11. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Borg et al.

Borg et al. fail to disclose the diameter of the escape aperture. The examiner takes Official Notice that the diameter of the escape aperture is a results-effective variable, i.e. a variable that achieves a recognized result. In the instant case, the diameter of the escape aperture is directly proportional to the amount of condensate that can pass through the device. Since the diameter of the escape aperture is recognized as a results-effective variable, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have chosen a escape aperture with a diameter not greater than 40 mm and more specifically not greater than 30 mm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (see MPEP 2144.05).

12. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moore.

Moore fails to disclose the diameter of the escape aperture. The examiner takes Official Notice that the diameter of the escape aperture is a results-effective variable, i.e. a variable that achieves a recognized result. In the instant case, the diameter of the

escape aperture is directly proportional to the amount of condensate that can pass through the device. Since the diameter of the escape aperture is recognized as a results-effective variable, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have chosen a escape aperture with a diameter not greater than 40 mm and more specifically not greater than 30 mm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (see MPEP 2144.05).

Allowable Subject Matter

13. Claim 26 is allowed.

Response to Arguments

14. Applicant's arguments filed 4/28/09 have been fully considered but they are not persuasive. The applicant is arguing that the device of Borg et al. is clearly not a condensate trap but a control valve trim cage. The examiner does not disagree with this assertion but the Borg et al. reference does contain all the structural limitations of the applicant's claimed invention and can be used as a condensate trap therefore the claim language would be anticipated by the Borg et al. reference. The vortex chambers in the Borg et al. reference could be used as multiple condensate traps.

15. The applicant is arguing that the flow of fluid into Moore is not freely admitted from the input into the vortex chamber. The examiner disagrees with this since the flow of the fluid from inlet 14 is admitted into the vortex chamber 29 and would then be directed into the void after exiting 27 in a free manner into the void of the chamber.

16. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., inlet opening into the void) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). The claim language indicates that the inlet enters the chamber and that the chamber defines a void. This claim language is anticipated by the Moore reference.

17. The applicant is further arguing that the condensate in Moore would not flash to steam in a low pressure region and therefore does not meet the claim limitation of "the condensate at higher than the saturation temperature flashes to steam within the low pressure region and is discharged through the escape aperture as steam at a relatively low mass flow rate". The examiner disagrees with this and points to page 3, col. 1, lines 27-33 in which Moore discloses that condensate at high temperatures flashes into vapor and is discharged into the low pressure chamber 17 as vapor. This is an inherent thermodynamic property of steam at given conditions related to the steam's pressure and temperature compared to its saturation temperature under low pressure conditions.

18. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re*

Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation is to have a housing located around the condensate trap as indicated above for protection.

Conclusion

19. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **CRAIG M. SCHNEIDER** whose telephone number is (571)272-3607. The examiner can normally be reached on **M-F 8:00 -4:30**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on (571) 272-4777. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. M. S./
Examiner, Art Unit 3753
June 25, 2009

/STEPHEN HEPPERLE/
Primary Examiner, Art Unit 3753